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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,634	03/30/2004	Steve Merrill	16836SSUS02U	3461

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EXAMINER

SWEENEY, PATRICK E

ART UNIT	PAPER NUMBER
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2112

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/812,634

Applicant(s)

MERRILL ET AL.

Examiner

Patrick E. Sweeney

Art Unit

2112

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the original filing of March 30, 2004. Claims 1-15 are pending and have been considered below.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "90" and "92" have been used to designate a storage resource and a storage subsystem (respectively) and a processor of the Meta-Manager and control logic of the Meta-Manager (respectively). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: the disclosure identifies reference character 96 of Figure 10 as being a "storage topology module" but

in the figure the reference character is attached to the item titled "Dataset location".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 7-8, 10, and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Stallmo et al. (US 5,875,456).

5. Claim 1: Stallmo discloses a method of preconditioning data to be transferred on a switched underlay network, the method comprising, (Examiners Note: No patentable weight is given to intended use of the preconditioning)

a. Causing data to be moved from a first storage subsystem having a first data read rate to a plurality of second storage subsystems having a collective read rate of greater magnitude than the collective read rate (Column 6, Lines 7-13);
and

b. Causing the data to be read out of the plurality of second storage subsystems at the collective read rate (Column 2, Lines 22-24).

6. Claim 3: Stallmo discloses a method as in Claim 1 above, wherein

Art Unit: 2112

- a. The plurality of second storage subsystems comprises the first storage subsystem and additional storage subsystems (Column 6, Lines 7-13).
7. Claim 7: Stallmo discloses a method as in Claim 1 above, wherein
 - a. The step of causing the data to be moved from the first storage subsystem comprises dividing the data into sections, and moving each of the sections to at least one of the second storage subsystems (Column 6, Lines 7-13).
8. Claim 8: Stallmo discloses a method of preconditioning data as in Claim 1 above, but does not explicitly disclose that the collective read rate is based on individual read rates of the each of the second storage subsystems. However, the definition of collective is that it is, or is related to, a group of individuals. The collective read rate must be based on the individual read rates of the collective, there is no other way to obtain a collective read rate. If a collective read rate were specified to be something other than the maximum possible read rate of the plurality of secondary storage devices it would still be physically constrained by the individual read rates of each of the second storage subsystems, and thus it must be based on the individual read rates of each of the second storage subsystems.
9. Claim 10: Stallmo discloses an apparatus for preconditioning data to be transferred on a switched underlay network, the apparatus comprising:

- a. An interface to a storage subsystem containing a file to be transferred, the storage subsystem having a data output interface having a first data read rate (Column 1, Lines 46-67);
 - b. Control logic configured to generate instructions to the storage subsystem to cause the storage subsystem to transfer portions of the file to a plurality of second storage subsystem from which the data may be read at a collective data read rate greater than the first data read rate (Column 1, Lines 46-67).
10. Claim 12: Stallmo discloses an apparatus as in Claim 10 above, wherein
- a. The instructions generated by the control logic cause the file to be divided into sections, each section of which comprises a portion of the file (Column 6, Lines 7-13).
11. Claim 13: Stallmo discloses an apparatus as in Claim 10 above, wherein
- a. The portions of the file are copies of the file (Column 2, Lines 32-41).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2112

13. Claims 2, 4-6, 8-9, 11, and 14-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Stallmo et al. (US 5,875,456).

14. Claim 2: Stallmo discloses a method of preconditioning data as in Claim 1 above, but does not explicitly disclose that the transfer rate of the first storage subsystem would be less than that of the transfer network. However Stallmo discloses that the first storage subsystem can be a disk device (Column 1, Lines 16-19). The applicant discloses that conventionally disk drives and other storage systems have outputs ranging from 10-100 Megabits per second, and in some cases as much as 4 gigabits per second. The applicant also discloses that it is currently known in the art that switched optical networking is capable of handling large data transfers, enabling transfer rates of at least 10 Gigabits per second. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement Stallmo's invention using a conventional storage system, meaning one with a transfer rate of 10 Mbps to 4 Gbps, on a switched optical network with a transfer rate of at least 10 Gbps. One would have been motivated to do this because of the greater speed is always desirable in the computer arts.

15. Claim 4: Stallmo discloses a method of preconditioning data as in Claim 1 above, but does not explicitly disclose that the data is to be multiplexed by a network element (which the applicant discloses can be servers, computers, nodes, routers, switches, hubs, proxies, and other devices). However Stallmo does disclose that a

RAID system can multiplex data from a plurality of discs, either through hardware or software implementation, i.e. a RAID controller or a computer (Column 1, Lines 56-67). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a computer to perform the multiplexing duties and connect that computer to a network. One would have been motivated to connect the computer to a network in order to conveniently transfer data .

16. Claim 5: Stallmo discloses a method of preconditioning data as in Claim 4 above, but does not explicitly disclose that the secondary storage subsystems are geographically closer to the network element than the first storage subsystem. However, Official Notice is taken that it is old and well known within the computing arts that transmissions across networks are not instantaneous and transmission time increases with the distance the signal must travel. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to position the storage systems that would be performing the data transfer geographically close to the network element and the network. One would have been motivated to position the second storage systems geographically closer to the network element in order to increase the speed of transfer.

17. Claim 6: Stallmo discloses a method of preconditioning data as in Claim 4 above, but does not explicitly disclose that the secondary storage subsystems are connected to the network element over links having higher bandwidth than the first

storage subsystem. A higher bandwidth means the possibility of a higher transmission rate if the system can transmit enough data to fill the bandwidth. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to connect the storage systems that would be performing the data transfer to the network element over links having a higher bandwidth. One would have been motivated to connect the second storage systems to the network element over links having a higher bandwidth in order to increase the speed and reliability of transfer.

18. Claim 9: Stallmo discloses a method of preconditioning data as in Claim 1 above, but does not explicitly disclose a pattern for reading data from the second storage subsystems nor communicating that pattern to a target subsystem. However, as a RAID controller can be software implemented, i.e. a computer can function as the RAID controller, the multiplexing function of the RAID controller can be performed at either the source, or the target destination, as long as the target destination has some information about how the data should be multiplexed. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to communicate the manner in which the data was read (the pattern) to the target storage subsystem for multiplexing purposes. One would have been motivated to do this to relieve the cpu of the source computer of the task, thus keeping it free for tasks more important than data transmission.

Art Unit: 2112

19. Claim 11: Stallmo discloses an apparatus of preconditioning data as in Claim 11 above, but does not explicitly disclose control logic for generating a pattern for reading data from the second storage subsystems. However, as a RAID controller can be software implemented, i.e. a computer can function as the RAID controller, the multiplexing function of the RAID controller can be performed at either the source, or the target destination, as long as the target destination has some information about how the data should be multiplexed. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to communicate the manner in which the data was read (the pattern) to the target storage subsystem for multiplexing purposes using control logic. One would have been motivated to do this to relieve the cpu of the source computer of the task, thus keeping it free for tasks more important than data transmission, and would need control logic to generate the pattern.

20. Claim 14: Stallmo discloses an apparatus for preconditioning data as in Claim 10 above, but does not explicitly disclose control logic to generate a pattern for reading data from the second storage subsystems. However, as a RAID controller can be software implemented, i.e. a computer can function as the RAID controller, the multiplexing function of the RAID controller can be performed at either the source, or the target destination, as long as the target destination has some information about how the data should be multiplexed. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to communicate the manner in which the data was read (the pattern) to the target storage subsystem for multiplexing

Art Unit: 2112

purposes, and therefore to implement control logic to generate the pattern. One would have been motivated to do this in order to transmit the pattern, since it must be generated before it can be transmitted.

21. Claim 15: Stallmo discloses an apparatus for preconditioning data as in Claim 14 above, but does not explicitly disclose the use of buffering instructions to the network element, nor instructions to identify the second storage subsystems that will provide the data to be transferred on the reserved resources. However the transmission of data requires some instructions or hardware control logic to either transfer the data directly from the non-volatile storage devices, or to read the data into volatile storage devices such as RAM which can then transfer the data to the network (i.e. there must be some instruction to dictate the type of buffering used). Likewise it would be necessary for the network element to know the identity of the second storage subsystems in order to pull the data from them. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement control logic to control the type of buffering to be used in the data transmission, as well as control logic to identify each of the second storage subsystems. One would have been motivated to do this because both steps are necessary requirements for the transmission of the data.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2112

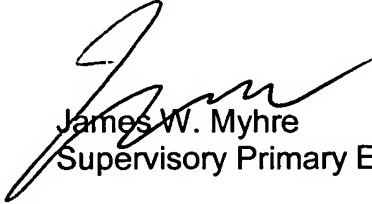
- a. Wood (US 5,671,350) discloses a system and method for striping backup data to multiple archive devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick E. Sweeney whose telephone number is (571) 270-1687. The examiner can normally be reached on Mon. - Fri. (Alternate Fridays Off) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on (571) 272-6722. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3800.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PES
January 8, 2007


James W. Myhre
Supervisory Primary Examiner